

# chapter 5

## TAKING STOCK

### *Identifying Problems and Opportunities*

#### Introduction

Here we make two presumptions. No town is without a transportation shortcoming. And no town is without a transportation opportunity. Knowing whether and how to fix the problem or take advantage of the opportunity starts with documenting the current state of affairs. That is the purpose of inventories and analyses.

#### THE INVENTORIES

A basic inventory for each community transportation plan consists of data provided by State agencies, metropolitan planning organizations, and regional councils, plus local information collected by each municipality that clearly identifies current conditions and trends in transportation and land use. This data should be collected and updated every five years to track changes in conditions and to determine progress in addressing recommended improvements.

The inventory can be divided into seven parts for ease of collecting information and thinking about it (feel free to combine them if it is easier to do so). These are:

1. Roadways and bridges
2. Pedestrian and bicycle facilities
3. Parking, both on-street and major off-street
4. Other modes, including transit, rail, air, and, in coastal communities, ports
5. Land use
6. Special features to conserve
7. Environmental considerations

The detail of your inventories will depend on the size and circumstances of the community. Some of the information you will need is provided by MaineDOT; other information is only available if the town collects and maintains it. Many small, rural towns have limited transportation facilities and few perceived transportation problems. If one or more of the inventory areas is of little relevance to your community, document that and move on. **Feel free to spend the time on the things that matter!**

If the Community Transportation Plan is a chapter or section in a larger Comprehensive Plan, much of the land use inventory (item 5) will be included in a separate chapter, and the transportation section will build on that.

## MAPS

Start out with one or more good base maps. A useful base map is a tax parcel map (at a scale of 1"= 1000', for example) of the whole town or major sections of the town. It has the full highway and street network, water bodies, rail lines, airport and other regional facilities, and enough space for field notes, for identifying major land uses, for drawing in parking areas and sidewalks, noting bus routes and stops (if any), and for recording other information. Another helpful map is one showing the regional transportation network. Maps provided by MaineDOT or the Regional Councils and included in the Comprehensive Planning Resource Package from the State Planning Office may be used for this purpose. With the help of the Regional Council, this information can be converted into a layer in a geographic information system (GIS) for more formal mapping and analysis later on.

## ELEMENTS OF THE INVENTORY

### Road and Bridge Inventory

MaineDOT has information on most arterial and state aid roads, which you can supplement as needed. Please ask MaineDOT for the following information, which it typically has on hand:

- **Condition of roads and bridges**

This addresses the physical elements located within the boundaries of the right-of-way, including number of lanes in each direction, pavement and shoulder width, and pavement condition. The inventory of bridges should note their type, condition, and who is responsible for their maintenance. Note any closed or posted roads or bridges. In addition, this part of the inventory should make note of transportation-related maintenance concerns such as washouts, broken signage, loose railings or damaged guard rails. More information about maintenance issues and how to address them can be found in [Working with the MaineDOT: A Guide for Municipal Officials](#). High priority problem areas along arterials and state aid roads that are identified in the community transportation plan – and that also are picked up as part of a regional plan – have the best chance of making their way into MaineDOT's biennial capital work plan.

- **Operations and safety**

This includes traffic volumes and types of traffic, the level of service and whether the road or bridge experiences congestion, and points of possible conflict, including the number and spacing of driveways entering the road, number and spacing of intersections, and presence and spacing of traffic signals and other traffic control devices. Other information about safety includes crash data, posted or measured

average speed, visual obstructions, and the visibility of speed limit signs. The presence or absence of sidewalks can be noted in this review, but details can be part of a companion inventory of pedestrian and bicycle facilities.

In addition to these state data, the inventory should review state and regional transportation plans that may affect the community, and potential impacts of those plans on the community and vice versa.

It is useful to include in the inventory the community's own observations and analyses about the workings of the arterial and state aid road system. These might include local perceptions of speeding or safety hot spots, or of conflicting demands put upon the road system. For example, some roads are called upon to play two or more major roles, and in these cases conflicts are common. Does a major state or U.S. route intended to carry large flows of traffic pass through downtown, where it must also play a local service role? Does a local street end up serving also as an informal by-pass for through traffic? Does a collector road that serves mostly local purposes also serve as a truck route?

The road and bridge inventory should also address local streets. Although it is not necessary to inventory conditions on every local street, it is worthwhile to inventory known problem areas and a few "typical" streets that may represent conditions townwide. The inventory should also examine standards for new streets, usually contained in local subdivision regulation. These can be compared with the recommendations that were presented in Chapter 3 under Applying the 4Ds at the Three Geographic Levels.

For the street system located within established residential areas and the "growth" areas of the community, the inventory should include a calculation of the "interconnection" ratio – the ratio of "links" in the street system to the "nodes" in the system. See Figure 3.3 (which is repeated at Figure B.3 in Appendix B) for an illustration of how to calculate an interconnection ratio.

A Local Street Inventory form can be found in Appendix C.

### Pedestrian and Bicycle Inventory

Bicycle and pedestrian access is vital to the transportation system. In neighborhoods, village and business centers, it is important to plan for sidewalks and safe crossings. On busy roads, away from activities that generate pedestrian traffic, a paved shoulder will suffice. The pedestrian and bicycle inventory records data about existing conditions and deficiencies for pedestrian and bicycle facilities. For facilities located off the pavement of the street, such as sidewalks and paths, the inventory includes location (one or both sides of roadway), width, material (concrete, brick, asphalt, other), condition, and presence of street trees, lighting and esplanade. For on-road facilities, the inventory includes width of shoulder, lighting if in built up areas, presence of pavement striping or bicycle lane signage, and location (one or both sides of roadways). The inventory should include an assessment of existing sidewalks and where sidewalks are needed to connect activities that generate

pedestrian traffic, such as schools, neighborhoods, commercial areas, and village centers.

A sample Pedestrian and Bicycle Inventory Form is included in Appendix C. As with other inventories, mapping information such as whether the path is used for walking and bicycling, the end points, availability of sidewalks and bicycle paths, and gaps in the system can reveal and communicate information better than words alone. See Figure 5-1.

## Parking Inventory

The parking inventory is most important in downtowns and villages, near major generators of traffic, and in neighborhoods where parking demands often exceed the supply of spaces (the classic example is college towns). In these areas, the inventory should include both on-street and major off-street parking areas. An on-street parking inventory should include number and type (e.g., parallel or diagonal) of spaces along a roadway, presence of signage and pavement markings identifying parking spaces, parking duration, and presence of parking meters. An off-street parking inventory should include location, number of spaces, presence of signage directing users to parking areas, and presence of essential parking amenities such as pavement markings and lighting.

Along commercial strips, where ample off-street parking typically is connected to individual retail stores and offices, counts of spaces are less important than the land area devoted to the impervious area (and generating storm water runoff), the typical location and layout of the parking lots, the visual impact from public ways, and whether standards call for safe passage for travelers (on foot or by vehicle) going from parking areas and the stores and between one store and another.

A sample Parking Inventory Form is included in Appendix C.

## Other Modes Inventory

Not every community has the population or conditions to support fixed bus route service or similar modes of transportation. As part of the inventory and analysis, it will be useful to consult MaineDOT's report, *An Analysis of Transit Provision in Maine* (2002) to determine whether the community may be positioned to think about establishing or expanding such service. But most communities do participate in certain alternative modes, such as ride-sharing and demand-responsive services.

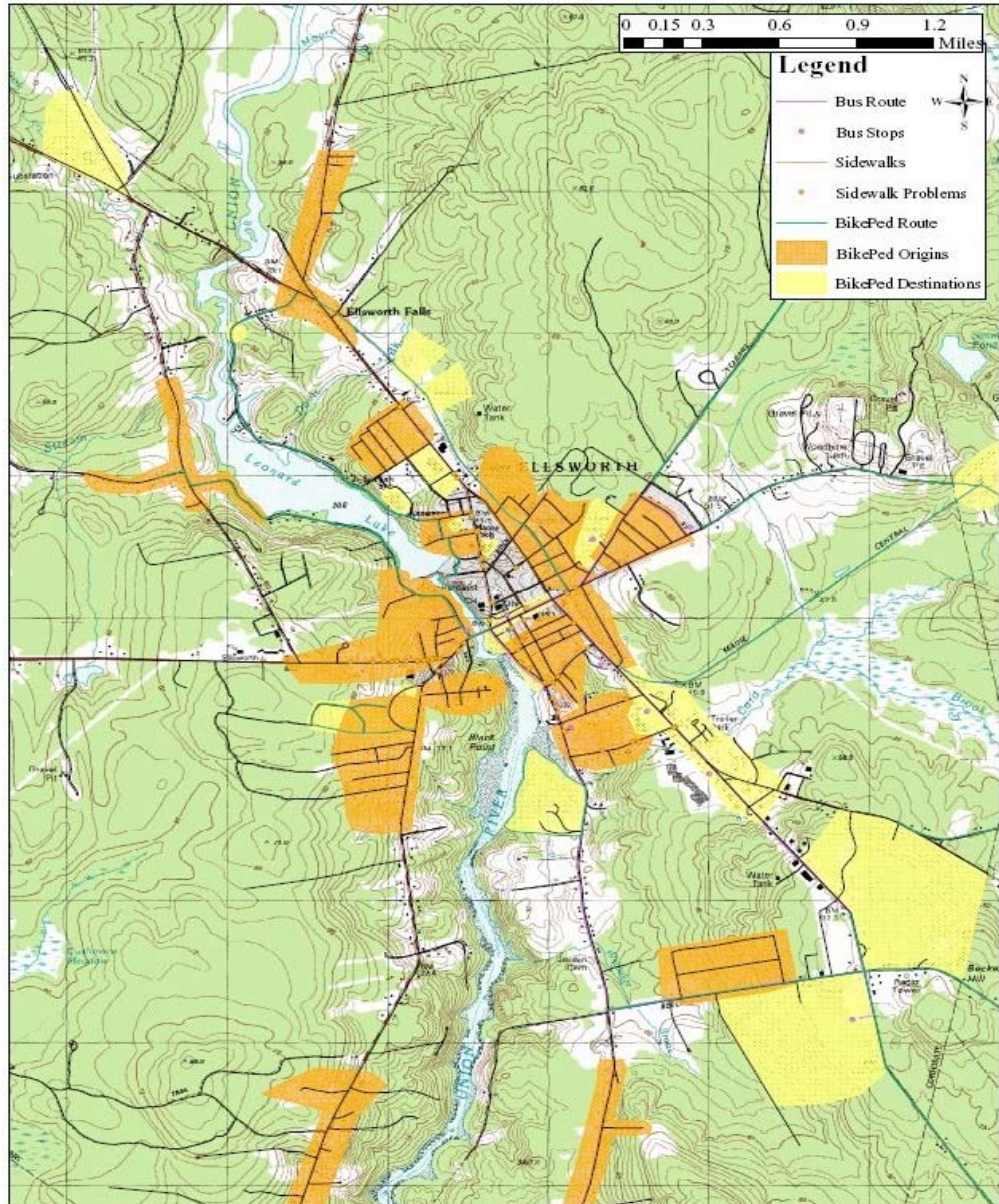
An inventory of other modes of transportation should include identification of bus services and routes (fixed route and demand-responsive, local and inter-city), shuttle services (private and public), freight and/or passenger rail if it is available, and ride-sharing (park-and-ride) lots within or adjacent to the community.

Where applicable, identify the location and known improvement needs of airports and seaports (including public ferry service and private boat transportation)



## City of Ellsworth

Figure 5-1  
Citizens and GIS:  
Ellsworth's Inventory of  
Bike/Ped Conditions



Map prepared by the Hancock County Planning Commission - JWB - 3/8/07

City of Ellsworth planners and the Hancock County Planning Commission met monthly with a citizen committee to prepare a Bicycle and Pedestrian Plan. Participants devoted several hours to identifying significant origins, destinations, and transportation and recreation routes within the City. Planning staff turned this information into GIS maps.

(See <http://www.hcpcme.org/landuse/ellsworth/BikePed/images/origindestination.jpg>)

The maps were then compared with current bicycle and pedestrian infrastructure including sidewalks, crosswalks, paved shoulders and trails to identify gaps in the system.

The resulting plan indicates critical infrastructure needs. The project proposals map has been placed online as a multi-layer PDF file. Browsers using more recent versions of Acrobat Reader can load the map and turn-on and off layers of interest to print custom maps.

(See <http://www.hcpcme.org/landuse/ellsworth/BikePed/images/EllsworthBikePed-Projects.pdf>)

within a community or region. Most municipal airports have an airport Master Plan, which should be evaluated for incorporation into the Comprehensive Plan or Transportation Plan. Coastal communities should include in their inventories land-side and water-side facilities associated with a harbor or port, points of public access for users of marine waters and whether or not they are protected, and land uses in the vicinity of the port and whether the pattern of land use is consistent with state, regional, and local objectives for marine transportation and accommodations. MaineDOT's Integrated Freight Plan and its Three Port Strategy (described in [Connecting Maine](#)) may be useful resources for this.

Because certain land use factors help to determine the feasibility and ease of bus or similar public service, it is useful here to identify neighborhoods or areas of Town being served by these modes, and to inventory the factors that can predict success of the system. These factors include the number of dwelling units per residential acre (residential density) within the area served, the amount of commercial floor space per lot area in downtowns (floor area ratio), and the street interconnection ratios in these areas. (Refer to Chapter 3 for discussion of the "4Ds.")

A sample Alternative Modes Inventory form is included in Appendix C.

## Land Use Inventory

The major land use inventory should identify (at a minimum) broad land use categories along roadways and include a list and location of any major traffic generators within a community or nearby that draw traffic into or through parts of the municipality. The inventory should include major employers (50 or more employees), downtowns, retail, commercial, and industrial developments, and land uses that generate truck traffic, and public service buildings and schools.

Where possible, put the inventory of major land uses into context with the larger transportation corridors beyond local boundaries. The major land uses along the corridor as it runs through your community probably are generating traffic that affects other communities, and vice versa. In some cases, the boundaries along commercial corridors between municipalities have become indistinguishable, as land uses in one community have spilled over into the next. Identifying these situations may lead to helpful regional discussions about how to best sustain the regional transportation system.

It is useful to include in this inventory a brief description of highway interchanges or major intersections located in or near the community, making note of the land use patterns that are evolving around them and what, if any, zoning or development standards are in place to manage the development.

This inventory is best done on a tax parcel base map, if one is available, or other map that shows the street system, augmented by appropriate summary tables.

## Special Features Inventory

This inventory covers items that help to define the character of the community and, in the judgment of the community, should be considered and incorporated, preserved or enhanced as part of future transportation modernization or expansion projects. Examples include scenic vistas, rural features like stone walls, significant buildings, including historic structures, and related yards or landscaping features of importance to the community, public parks or monuments, rows or stands of significant roadside trees, public access points to water bodies, trails, conservation lands or other elements of the built or natural environment that are part of the community's identity and that would create community backlash if threatened or ignored in a transportation project. Identifying these will help make sure that the MaineDOT is aware of them as it goes through its own planning processes.

No special form is needed for this inventory. It is best done on a map with good labels and annotations and summarized in a narrative in the plan.

## Environmental Considerations

Transportation facilities have three characteristics that have implications for the environment: (1) they cross large expanses of landscape and thus inevitably intersect important elements of the natural environment, including streams, wildlife habitat, wetlands, and slopes; (2) they introduce a lot of impervious surfaces that increase storm water flows and nonpoint source pollution; and (3) they carry vehicles that are noisy and that themselves generate nonpoint pollution in the form of emissions to the air.

The inventory should identify areas where streets or other transportation facilities may be degrading the environment or that should receive special consideration as development and the associated transportation system expand. These might include stream crossings, vernal pools, wetlands and other significant wildlife habitat, areas where culverts are in poor condition and may be impeding proper water flow, and slopes steeper than 10%.

## THE NEIGHBORHOOD AUDIT: A PUBLIC PARTICIPATION TOOL

An optional but good tool to both directly involve citizens of the community and get insights that might not otherwise come to light is a “neighborhood audit.” This is essentially a one-day event (or multiple days if it involves different neighborhoods on different days) – an opportunity to invite interested citizens to systematically record information and thoughts about their neighborhoods, downtowns, or other areas of interest.

The neighborhood audit relies on citizens to identify and examine the existing conditions in their neighborhoods and communities. The audit should record not only the physical elements defined in the inventory section above, but also impressions of other conditions such as: how traffic flows and behaves, pedestrian

and bicycle activities and needs, speed of traffic, presence of trucks or other roadway noise generators, parking demand and availability, economic vitality, open space, visual resources, and community growth. A neighborhood audit involves a walking tour of the community or portions of the community, guided by local officials using the appropriate inventory forms. During the audit, participants are encouraged to describe and discuss problems or issues.

Strategies to conduct a successful neighborhood audit include:

- **Centralized Location.** Depending on the size of the area to be audited (neighborhood, downtown, corridor), a centralized starting and ending location should be identified. Possible locations can include town hall, school, park, neighborhood entrance, or off-street parking area.
- **Timing.** Audits should be conducted during convenient times to maximize participation. This can include weekend mornings, but may also be during specific times (such as weekday morning or evening hours) if a specific issue needs to be addressed or observed. Audits should always be conducted during daylight hours for safety purposes.
- **Planned Route.** Lead local officials or staff should plan the neighborhood audit route in advance. The route should be accessible for all participants and specifically cover areas of concern. Local law enforcement should be informed of the planned route and provide an escort in high traffic areas or difficult crossing locations. In high traffic areas especially, participants are encouraged to don safety vests; MaineDOT may be able to provide these on loan with advance scheduling.
- **Advertising/PR.** The audit should be properly advertised to maximize participation. This can include advertisements or press releases in local newspapers, community television, flyers, and notices at town official or planning board sessions.

## ANALYSIS

### The Local Transportation Self Audit: Benchmarking Against the Best Transportation-Land Use Practices

Once the basic data inventory is completed and summarized for your community, it is useful to go through a self-audit to see how close conditions in the community match up with best transportation-land use practices. This self-audit can be done by members of the planning committee, staff, or consultants. It can be done by one person, or the planning committee can go through it as a group.

The self-audit is a comparison between the profile of the community from the inventory to several of the basic ideas and design features detailed in Chapter 3, in the section “Applying the 4Ds at the Three Geographic Levels.” The following chart can be used as the basis for the self audit. The benchmarks are targeted to growing suburban towns. Many of the benchmarks apply to larger communities as well, although some, such as residential densities, would be higher.



Sometimes, the transportation problems that a community may be experiencing can be traced, at least in part, to performance that falls short of these transportation-land use benchmarks.

Table 5-1.  
Local Transportation  
Self-Audit for Growing  
Suburban Towns

	Benchmark	Actual
Does the Town's Comprehensive Plan clearly designate non-rural growth areas:		
-- for residences	yes	
-- for commerce	yes	
Roughly what percent of neighborhood and village households are located less than 1/2-mile by street or sidewalk of:		
-- a school, place of worship, or other civic facility	60%+	
-- a small grouping of local stores and services	60%+	
-- a park or other public open space	60%+	
Within settled or designated growth areas, what is the average residential density (units per residential acre) for areas:		
-- served by public sewer	3 to 4+	
-- served by on-site sewer (septic system)	1 to 2	
Within downtowns or village centers with a business area, what is the overall floor area ratio	0.6+	
Within developing residential areas, how interconnected is the:		
-- local street system, as measured by link-to-node ratio <sup>1</sup>	1.4+	
-- sidewalk system	continuous	

<sup>1</sup>. See Figure 3.3 for an illustration of how to calculate the link-to-node (or interconnection) ratio

	Benchmark	Actual
Within developing residential areas, does the neighborhood (local) street standard call for:		
-- sidewalk on at least one side	yes	
-- paved street width of	20-24'	
-- landscape buffer (esplanade or planting strip)	yes	
-- actual speed limit on local streets is	max 25 mph	
-- if more than 25 mph, traffic calming devices are planned	yes	
Within developing residential areas, are rural collectors served by:		
-- sidewalk on at least one side	yes	
-- paved width, including shoulders, of	28-32'	
-- speed limit of less than	35 mph	
-- bicycle accommodation in shoulders	yes	
If the community has at least the following population density over a significant part of its geography, is it served by:		
-- 2,000+ persons per square mile	Local fixed-route bus, 7 days/wk	
-- 1,000 – 2,000 persons per square mile	Local fixed-route bus, 5 days/wk	
-- 500 – 1,000 persons per square mile	Rural fixed-route connector to service center	
-- under 500 persons per square mile	General public demand-response service	

## Identifying the Problems and Opportunities

The information now in hand should allow you to confirm, modify, or even reject preconceived notions of issues. It may provide new insights about issues that are otherwise well recognized and may lead to entirely new identification of problems or opportunities. In any case, take time to mull the information. The immediate objective of analyzing the information is to reach clearly stated conclusions about the transportation problems and opportunities that may be in front of the community, either now or in the future, and their likely causes.

In stating the problems, draw directly upon the inventories. This will help to ensure that the stated problems trace back to the documentation in the inventories. And strive to express the needs of the community in specific, and even quantified, terms. For example:

“Residents of the Willow Way area express a great deal of concern about safety of pedestrians. The inventories found that traffic in the area appears to be more than 1000 vehicles per day, and sidewalks are intermittent, with about a ½-mile of missing sidewalks between one end of the area and the local school and playground.”

“The number of driveways along the segment of Route 302 between Point X and Point Y is proliferating, and is now approaching 30 driveways per mile. In consultation with MaineDOT, we have determined that turning movements across traffic are increasing and that if current trends continue safety or congestion issues are likely to arise.”

“The inventories identified two failing culverts that appear to be exacerbating erosion problems along Riverview Avenue between Point A and Point B.”

Not every issue can be expressed statistically, but, as long as the documentation exists from the inventories, most can be explained clearly enough that future readers – and especially decision-makers who may be called upon to take action – will understand what is before them. And the issues should be stated clearly enough that the Committee can think about strategies that are well targeted to address them.

In Appendix A you can find a sample of common transportation-land use problems and opportunities that arise in many growing communities. For those that may be relevant to you, document and describe them in the detail that applies in your community. This appendix also points you to examples of strategies to address these common issues, which are summarized in Appendix B.

